

**REMARKS**

Claims 1, 3-7, 12-13 were pending in the present application when last examined. Claims 8-11 were previously withdrawn from consideration and claim 2 was previously canceled. By virtue of this response, claim 1 is amended and new claims 14-18 are added. Accordingly, claims 1, 3-7, 12-18 are currently under consideration.

**Claim Amendments and New Claims**

Support for the amendment to claim 1 is found, for example, in the claims as originally presented and page 23, lines 2-6 and page 33, lines 5-11 of the present specification. Accordingly, no new matter has been added.

Support for new claims 14-18 may be found throughout the present specification, e.g., the claims as originally presented; page 15, line 23 to page 17, line 11; and page 35, line 21 to page 36, line 15. Accordingly, no new matter has been added.

**Rejections under 35 U.S.C. §103(a)****A. Claims 1, 3-7, 12, and 13**

Claims 1, 3-7, 12, and 13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kimura et al., U.S. Patent No. 6,201,823 (hereinafter "Kimura") in combination with Zauner et al., publication from Materials Research Society (hereinafter "Zauner").

Applicants submit that Kimura and Zauner, alone or in combination, fail to disclose or suggest a nitride compound semiconductor light emitting device as presently claimed. In particular, claim 1 is amended to recite a nitride compound semiconductor light emitting device including "a GaN substrate having a (0001) plane whose crystal orientation is tilted away from a <0001> direction by an angle which is equal to or greater than about 0.05° and which is equal to or less than about 2°". The above-mentioned features are supported by, for example, page 23, lines 2-6 and

page 33, lines 5-11 of the present specification. Claim 1 also recites that the semiconductor multilayer structure includes an acceptor doping layer and an active layer.

The above-features of claim 1 result in, for example, low hole density and low surface roughness as shown in Figures 5 and 6 of the present specification. This leads to a surface flatness improvement at the time of growing the underlying layer, substantial elimination of In concentration in the active layer, and less non-uniform dot-like regions without heat treatment. For example, these features result in a nitride compound semiconductor light emitting device which emits high-intensity light with a low operation voltage and/or current, without damage due to heat treatment.

The cited references do not teach or suggest the features of claim 1 recited above. In particular, Kimura discloses a semiconductor laser diode structure grown over a sapphire substrate (see, e.g., Figs. 1 and 2 and related description, and previous Office Action, Paper No. 20031215, at page 2). Accordingly, Kimura does not disclose or suggest a nitride compound semiconductor light emitting device having a GaN substrate as presently claimed.

The addition of Zauner fails to cure the deficiencies of Kimura and does not fairly suggest modifying the device of Kimura to meet the features of claim 1. In particular, Zauner discloses only that the (000-1) surfaces of the GaN substrate are used (see EXPERIMENTAL section of Zauner), and clearly does not disclose or suggest the (0001) plane of the GaN substrate. As discussed in the previous amendment filed by the Applicant on September 18, 2003, the (0001) plane in the GaN substrate is substantially different in structure and result from the (000-1) surfaces of the GaN substrate. For example, within a GaN substrate, there is a (0001) plane which is terminated with Ga atoms, and a (000-1) plane which is terminated with N atoms. Accordingly, the properties of the (0001) plane are significantly different from that of the (000-1) plane. For example, table 1 of Zauner shows hillocks of  $10^3$  or more  $\text{cm}^{-2}$  remain, even in the case of tilting the surface plane to provide a convex and concave condition, which is difficult to achieve with growth on a Ga plane as recited.

Therefore, the combination of Kimura and Zauner fails to disclose or suggest the features of claim 1, and one skilled in the art would not be motivated to combine the teachings of Kimura and Zauner, or modify the teachings of Kimura and Zauner, to meet the features of claim 1. Even if one of ordinary skill in the art attempted to combine Kimura et al. with Zauner et al. as the Examiner asserts, the nitride compound semiconductor light emitting device having the above-features of claim 1, e.g., including “a GaN substrate having a (0001) plane ...”, would not be obtained. Accordingly, claims 1, 3-7, 12, and 13 should be allowed over the references.

B. Claims 14-18

Applicants submit that the features of new independent claim 14 and dependent claims 15-18 are neither disclosed nor suggested by Kimura and Zauner alone or in combination. Claim 14 includes features similar to those discussed above with respect to claim 1, and are allowable over the references for similar reasons discussed above. Accordingly, Applicants request immediate allowance of claims 14-18.

**CONCLUSION**

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue. If it is determined that a telephone conference would expedite the prosecution of this application, the Examiner is invited to telephone the undersigned at the number given below.

In the event the U.S. Patent and Trademark office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to Deposit Account No. 03-1952 referencing docket no. 299002051800. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

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Respectfully submitted,

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